SEQUENCE LISTING

<110> Demmer, Jeroen
Shenk, Michael Andrew
Hall, Claire
Fish, Steven A

<120> Compositions isolated from forage grasses and methods for their use.

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<150> 60/409,557
<151> 2002-09-09

<160> 44

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<213> Lolium perenne

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<212> DNA
<213> Festuca arundinacea

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<212> DNA
<213> Lolium perenne

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<212> DNA
<213> Festuca arundinacea

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<210> 5
<211> 1084
<212> DNA
<213> Lolium perenne

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cgtcgtgcca cctggatgac ctccgcgcgc tgcggggctt tgtcgggaac ctcaatggcg 180
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<212> DNA
<213> Festuca arundinacea

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taataaacat atttttgttg aaaaaaaaaa 1230

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<211> 1212

<212> DNA
<213> Lolium perenne

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<211> 1064
<212> DNA
<213> Lolium perenne

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<212> DNA
<213> Festuca arundinacea

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<210> 10
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<212> DNA
<213> Lolium perenne

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<210> 11
<211> 1006
<212> DNA
<213> Festuca arundinacea

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<212> DNA
<213> Lolium perenne

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<210> 13
<211> 243
<212> PRT
<213> Lolium perenne

<400> 13
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Asp Phe Ala Gly Asn Leu Arg Gly Gly Gly Val Leu Leu Arg Ala Ala
        35                  40                  45
Leu Pro Gly Ala Ser Cys Cys Gly Trp Glu Gly Val Gly Cys Asp Gly
    50                  55                  60
Ala Ser Gly Cys Val Lys Ser Phe Gln Ile Leu Leu Lys Gly Leu Thr
65                  70                  75                  80
Ala Ala Gly Arg Ser Leu Gly Lys Ala Phe Thr His Met Pro Leu His
                85                  90                  95
Val Lys Pro Ser Gln Gly Thr Leu Asp Glu Asp His Asn Thr Ile Thr
            100                 105                 110
```

```
Gly Ile Asn Asn Thr Val Arg Ser Gly Ser Asn Asn Val Val Ser Gly
        115                 120                 125
Asn Asp Asn Thr Val Ile Ser Gly Asn Asn Asn Val Val Ser Gly Ser
    130                 135                 140
His Asn Thr Val Val Phe Gly Gly Asp Asn Phe Ile Ser Gly Ser Tyr
145                 150                 155                 160
His Val Val Ser Gly Asn His His Val Val Thr Asp Asn Lys Asn Ala
                165                 170                 175
Val Ser Gly Asp His Asn Thr Val Ser Gly Ser Gln Asn Thr Val Ser
            180                 185                 190
Gly Asn His Gln Ile Val Ser Gly Ser His Ser Thr Val Ser Gly Asn
        195                 200                 205
His Asn Thr Val Ser Gly Arg Asn Asn Ser Val Tyr Gly Asn Asn Asn
    210                 215                 220
Ile Val Ser Gly Ser Asn His Val Val Tyr Gly Asn Asn Lys Val Val
225                 230                 235                 240
Thr Gly Gly
```

<210> 14
<211> 243
<212> PRT
<213> Festuca arundinacea

<400> 14

```
Met Ala Lys Cys Trp Gln Leu Leu Leu Phe Leu Ala Phe Leu Leu Pro
 1               5                  10                  15
Ala Ala Ser Ala Ala Ser Arg His Pro Asp Asp Leu Arg Ala Leu Gln
            20                  25                  30
Asp Phe Ala Gly Asn Leu Arg Gly Gly Gly Val Val Leu Arg Ala Ala
        35                  40                  45
Leu Ser Gly Gly Ser Cys Cys Asp Trp Glu Gly Ala Gly Cys Asp Gly
    50                  55                  60
Ala Ser Gly Arg Val Thr Ser Phe Gln Ile Leu Leu Lys Gly Leu Thr
65                  70                  75                  80
Thr Ala Gly Arg Ser Leu Gly Lys Ala Phe Thr Asn Met Pro Leu His
                85                  90                  95
Val Lys Ser Ser Gln Gly Thr Leu Asp Glu Glu His Asn Thr Ile Thr
            100                 105                 110
Gly Ile Asn Asn Thr Val Lys Ser Gly Ser Asn Asn Val Val Ser Gly
        115                 120                 125
Asn Asp Asn Thr Val Ile Ser Gly Asn Asn Asn Val Val Ser Gly Ser
    130                 135                 140
His Asn Thr Val Val Phe Gly Gly Asp Asn Phe Leu Ser Gly Ser Asn
145                 150                 155                 160
His Val Val Ser Gly Asn His His Val Val Thr Asp Asn Lys Asn Ala
                165                 170                 175
Val Ser Gly Asp His Asn Thr Val Ser Gly Ser Gln Asn Thr Val Ser
            180                 185                 190
Gly Asn His His Ile Ile Ser Ala Ser His Ser Thr Ile Ser Gly Asn
        195                 200                 205
His Asn Thr Val Ser Gly Ser Asn Asn Phe Val Ser Gly Asn Asn Asn
    210                 215                 220
Ile Val Ser Gly Ser Asn His Val Val Tyr Gly Asn Asn Lys Val Val
225                 230                 235                 240
Thr Gly Gly
```

<210> 15
<211> 267
<212> PRT
<213> Lolium perenne

<400> 15
Met Pro Glu Tyr Met Ala Lys Cys Cys Met Leu Leu Val Phe Leu Gly
1 5 10 15
Phe Ile Leu Gln Val Ala Gly Ala Thr Ser Trp Ser Cys His His Asp
20 25 30
Asp Leu His Ala Leu Arg Gly Leu Ala Glu Asn Leu Ser Gly Lys Gly
35 40 45
Ala Val Arg Leu Arg Ala Ala Trp Ser Gly Ala Ser Cys Cys Ser Trp
50 55 60
Glu Gly Val Gly Cys Glu Thr Ala Ser Gly Arg Val Val Ala Leu Arg
65 70 75 80
Leu Pro Lys Arg Gly Leu Gly Gly Ile Ile Pro Ser Ser Ile Gly Glu
85 90 95
Leu Asp His Leu Arg Tyr Leu Asp Leu Ser Gly Asn Ser Leu Val Gly
100 105 110
Glu Val Pro Lys Ser Leu Gln Ile Arg Leu Lys Ser Leu Thr Thr Asp
115 120 125
Ser Gln Ser Leu Gly Met Gly Ser Ile Asn Met Leu Leu His Val Ser
130 135 140
Ser Arg Arg Thr Leu Asp Glu Glu Pro Asn Thr Ile Ser Gly Thr Asn
145 150 155 160
Asn Ser Val Gly Ser Gly Ser Asn Asn Val Val Ser Gly Asn Asp Asn
165 170 175
Thr Val Val Ser Gly Asn Asn Asn His Val Ser Gly Ser Asn Asn Thr
180 185 190
Val Val Thr Gly Ser Asp Asn Thr Val Val Gly Ser Asn His Val Val
195 200 205
Ser Gly Thr Lys His Ile Val Thr Asp Asn Asn Asn Val Val Ser Gly
210 215 220
Asn Asp Asn Asn Val Ser Gly Ser Phe His Thr Val Ser Gly Glu His
225 230 235 240
Asn Thr Val Ser Gly Ser Asn Asn Thr Val Ser Gly Ser Asn His Ile
245 250 255
Val Ser Gly Ser Asn Lys Val Val Thr Asp Gly
260 265

<210> 16
<211> 269
<212> PRT
<213> Festuca arundinacea

<220>
<221> VARIANT
<222> (1)...(269)
<223> Xaa = Any Amino Acid

<400> 16
Met Pro Glu Tyr Met Ala Lys Cys Cys Met Leu Leu Leu Leu Leu Ala
1 5 10 15
Phe Ile Leu Leu Gln Val Ala Gly Ala Thr Ser Trp Ser Cys His His
20 25 30

```
Asp Asp Leu Arg Ala Leu Arg Gly Phe Ala Glu Asn Leu Ser Gly Lys
        35                  40                  45
Gly Ala Val Arg Leu Arg Ala Ala Trp Ser Gly Ala Ser Cys Cys Ser
    50                  55                  60
Trp Glu Gly Val Gly Cys Glu Thr Ala Ser Gly Arg Val Ala Ala Leu
65                  70                  75                  80
Arg Leu Pro Lys Arg Gly Leu Gly Gly Thr Ile Pro Ser Ser Ile Gly
                85                  90                  95
Glu Leu Asp His Leu Arg Cys Leu Asp Leu Ser Gly Asn Ser Leu Val
            100                 105                 110
Gly Lys Val Pro Lys Ser Leu Gln Ile Arg Leu Xaa Ser Leu Ser Thr
        115                 120                 125
Asp Gly Gln Ser Leu Gly Met Gly Ser Ile Asn Thr Leu Leu His Val
    130                 135                 140
Ser Ser Asn Arg Arg Thr Leu Asp Glu Glu Pro Asn Thr Ile Ser Gly
145                 150                 155                 160
Thr Asn Asn Ser Val Gly Ser Gly Ser Asn Asn Val Val Ser Gly Asn
                165                 170                 175
Asp Asn Thr Val Ile Ser Gly Asn Asn Asn His Val Ser Gly Ser Asn
            180                 185                 190
Asn Thr Val Val Thr Gly Ser Asp Asn Thr Leu Val Gly Ser Asn His
        195                 200                 205
Val Val Ser Gly Thr Lys His Ile Val Thr Asp Asn Asn Asn Val Val
    210                 215                 220
Ser Gly Asn Asp Asn Asn Val Ser Gly Ser Phe His Thr Val Ser Gly
225                 230                 235                 240
Glu His Asn Thr Val Ser Gly Ser Asn Asn Thr Val Ser Gly Ser Asn
                245                 250                 255
His Val Val Ser Gly Ser Asn Lys Val Val Thr Asp Gly
            260                 265
```

<210> 17
<211> 281
<212> PRT
<213> Lolium perenne

<400> 17

```
Met Ala Lys Cys Trp Leu Leu Leu Leu Phe Leu Val Phe Leu Leu Leu
 1               5                  10                  15
Ala Met Ser Ala Thr Ser Cys His Leu Asp Asp Leu Arg Ala Leu Arg
            20                  25                  30
Gly Phe Val Gly Asn Leu Asn Gly Gly Gly Ala Leu Leu Arg Gly Thr
        35                  40                  45
Trp Ser Gly Ser Ser Cys Cys Asp Trp Glu Gly Val Gly Cys Asp Gly
    50                  55                  60
Thr Ser Gly Arg Val Thr Ala Leu Arg Leu Pro Ile Ser Leu Glu Asp
65                  70                  75                  80
Cys Gly Lys Leu Lys Ser Leu Asn Leu Ala Asn Glu Arg Leu Val Gly
                85                  90                  95
Thr Ile Pro Ser Trp Ile Gly Glu Leu Asp His His Cys Tyr Leu Val
            100                 105                 110
Leu Ser Asp Asn Ser Leu Val Gly Lys Ala Pro Asn Ser Leu His Asn
        115                 120                 125
Ser Leu Gln Ile Arg Leu Lys Gly Leu Ala Thr Ala Gly Arg Ser Leu
    130                 135                 140
Gly Met Ala Phe Ala Asn Met Pro Leu His Val Lys Gly Asn Arg Arg
145                 150                 155                 160
```

```
Thr Leu Asp Glu Gln Thr Asn Thr Ile His Gly Thr Asn Asn Thr Val
                165                 170                 175
Arg Ser Gly Asn Asp Asn Ala Val Ser Gly Asn Asp Asn Thr Val Ile
            180                 185                 190
Cys Gly Asn Asn Asn Thr Val Ser Gly Ser Asn Asn Thr Ile Ala Ser
        195                 200                 205
Gly Ser Asp Asn Ile Val Thr Gly Ser Asn His Ile Val Cys Gly Thr
    210                 215                 220
Lys His Ile Ile Thr Asp Asn Asn Asn Asp Val Ser Gly Asn Asp Asn
225                 230                 235                 240
Asn Val Ser Gly Ser Phe His Thr Val Ser Gly Ser His Asn Thr Val
                245                 250                 255
Ser Gly Ser Asn Asn Thr Val Ser Gly Ser Asn His Val Val Ser Gly
            260                 265                 270
Ser Asn Lys Leu Val Thr Gly Asp Glu
        275                 280
```

<210> 18
<211> 277
<212> PRT
<213> Festuca arundinacea

<400> 18

```
Met Ala Lys Cys Trp Leu Leu Leu Leu Phe Leu Val Val Leu Leu Pro
 1               5                  10                  15
Ala Ala Ser Ala Thr Ser Cys His Pro Asp Asp Leu Arg Ala Leu Arg
            20                  25                  30
Gly Phe Val Gly Asn Leu Asn Gly Gly Gly Val Leu Leu His Gly Ala
        35                  40                  45
Trp Ser Gly Ser Leu Cys Cys Ala Trp Glu Gly Val Gly Cys Asp Gly
    50                  55                  60
Thr Ser Gly Arg Val Thr Ala Leu Arg Leu Pro Ile Ser Leu Lys Asp
65                  70                  75                  80
Cys Gly Lys Leu Lys Ser Leu Asn Leu Ala Asn Asp Arg Leu Val Gly
                85                  90                  95
Thr Ile Pro Ser Trp Ile Gly Glu Leu Asp His Leu Cys Tyr Leu Val
            100                 105                 110
Leu Ser Asp Asn Ser Leu Val Gly Lys Val Pro Asn Ser Leu Gln Ile
        115                 120                 125
Arg Leu Lys Gly Leu Ala Thr Ala Gly Arg Ser Leu Gly Met Ala Phe
    130                 135                 140
Ala Asn Met Pro Leu His Val Lys Gly Asn Arg Arg Thr Leu Asp Glu
145                 150                 155                 160
Gln Thr Asn Thr Ile Gln Gly Thr Asn Asn Thr Val Arg Ser Gly Asn
                165                 170                 175
Asp Asn Ala Val Ser Gly Asn Asp Asn Thr Val Ile Cys Gly Asn Asn
            180                 185                 190
Asn Thr Val Ser Gly Ser Asn Asn Thr Ile Val Ser Gly Ser Asp Asn
        195                 200                 205
Ile Val Thr Gly Ser Asn Gln Val Val Cys Gly Thr Lys His Ile Ile
    210                 215                 220
Thr Asp Asn Asn Asn Asp Val Ser Gly Asn Asp Asn Asn Val Ser Gly
225                 230                 235                 240
Ser Ser His Thr Val Ser Gly Ser His Asn Thr Val Ser Gly Ser Asn
                245                 250                 255
Asn Thr Val Ser Gly Ser Asn His Val Val Ser Gly Ser Asn Lys Val
            260                 265                 270
```

Val Thr Gly Asp Glu
275

<210> 19
<211> 277
<212> PRT
<213> Lolium perenne

<400> 19
Met Ala Lys Cys Trp Leu Leu Leu Leu Phe Leu Val Phe Leu Leu Leu
1 5 10 15
Ala Val Cys Ala Thr Ser Cys His Pro Asp Asp Leu Arg Ala Leu Arg
20 25 30
Gly Phe Val Gly Asn Leu Asn Gly Gly Gly Val Leu Leu Arg Glu Thr
35 40 45
Trp Ser Gly Ser Ser Cys Cys Ala Trp Glu Gly Val Gly Cys Asp Gly
50 55 60
Thr Ser Gly Arg Val Thr Ala Leu Arg Leu Pro Ile Ser Leu Glu Asp
65 70 75 80
Cys Gly Lys Leu Lys Ser Leu Asn Leu Ala Asn Glu Arg Leu Val Gly
85 90 95
Thr Ile Pro Ser Trp Ile Gly Glu Leu Asp His His Cys Tyr Phe Val
100 105 110
Leu Ser Asp Asn Ser Leu Val Gly Lys Val Pro Asn Ser Leu Gln Ile
115 120 125
Arg Leu Lys Gly Leu Ala Thr Ala Gly Arg Ser Leu Gly Met Ala Phe
130 135 140
Ala Asn Met Pro Leu His Val Lys Gly Asn Arg Arg Thr Leu Asp Glu
145 150 155 160
Gln Thr Asn Thr Ile His Gly Thr Asn Asn Thr Val Arg Ser Gly Asn
165 170 175
Asp Asn Ala Val Ser Gly Asn Asp Asn Thr Val Met Cys Gly Asn Asn
180 185 190
Asn Thr Val Ser Gly Ser Asn Asn Thr Ile Ser Ser Gly Ser Asp Asn
195 200 205
Ile Val Thr Gly Ser Asn His Ile Val Cys Gly Thr Lys His Ile Ile
210 215 220
Thr Asp Asn Asn Asn Asp Val Ser Gly Asn Asp Asn Asn Val Ser Gly
225 230 235 240
Ser Phe His Thr Val Ser Gly Ser His Asn Thr Val Ser Gly Ser Asn
245 250 255
Asn Thr Val Ser Gly Ser Asn His Val Val Ser Gly Ser Asn Lys Val
260 265 270
Val Thr Gly Asp Glu
275

<210> 20
<211> 280
<212> PRT
<213> Lolium perenne

<400> 20
Met Gly Leu Leu Leu Leu Phe Leu Ala Phe Leu Leu Pro Val Ala Cys
1 5 10 15
Ala Ala Thr Ser Ser Cys His Pro Asp Asp Leu Arg Ala Leu Arg Gly
20 25 30
Phe Ala Lys Asn Leu Gly Gly Gly Gly Val Leu Leu Arg Thr Ala Trp

```
        35                  40                  45
Ser Gly Thr Ser Cys Cys Val Trp Glu Gly Val Gly Cys Asn Gly Ala
    50                  55                  60
Ser Gly Arg Val Thr Thr Leu Trp Leu Pro Arg Arg Gly Leu Ala Gly
65                  70                  75                  80
Thr Ile Thr Gly Ala Ser Leu Ala Gly Leu Ala Arg Leu Glu Ser Leu
                85                  90                  95
Asn Leu Ala Asn Asn Arg Leu Val Gly Thr Ile Pro Ser Trp Ile Gly
            100                 105                 110
Glu Leu Asp His Leu Leu Tyr Leu Asp Leu Ser His Asn Ser Leu Val
        115                 120                 125
Gly Glu Leu Pro Asn Leu Lys Gly Leu Thr Thr Thr Gly His Leu Leu
    130                 135                 140
Gly Met Ala Phe Thr Ser Met Pro Leu Asp Val Lys Pro Asn Arg Arg
145                 150                 155                 160
Thr Leu Ala Val Gln Pro Asn Thr Ile Ser Gly Thr Asn Asn Ser Val
                165                 170                 175
Leu Ser Gly Arg Asn Asn Thr Val Ser Gly Asn Asp Asn Thr Val Ile
            180                 185                 190
Ser Gly Asn Asn Asn Thr Val Ser Gly Ser Phe Asn Thr Val Val Thr
        195                 200                 205
Gly Ser Asp Asn Val Leu Thr Gly Ser Asn His Val Val Ser Gly Arg
    210                 215                 220
Asn His Ile Val Thr Asp Asn Asn Asn Ala Val Ser Gly Asp Asp Asn
225                 230                 235                 240
Asn Val Ser Gly Ser Phe His Lys Val Ser Gly Ser His Asn Thr Val
                245                 250                 255
Ser Gly Ser Asn Asn Thr Val Ser Gly Arg Asn His Val Val Ser Gly
            260                 265                 270
Ser Asn Lys Val Val Thr Gly Gly
        275                 280

<210> 21
<211> 285
<212> PRT
<213> Festuca arundinacea

<400> 21
Met Gly Leu Leu Leu Leu Phe Leu Gly Phe Leu Leu Pro Ala Ala Cys
 1               5                  10                  15
Ala Ala Thr Ser Ser Cys His Pro Asp Asp Leu Arg Ala Leu Arg Gly
            20                  25                  30
Phe Ala Lys Asn Val Gly Gly Gly Gly Val Leu Leu Arg Thr Ala Trp
        35                  40                  45
Ser Gly Thr Ser Cys Cys Val Trp Glu Gly Val Gly Cys Asn Gly Ala
    50                  55                  60
Ser Gly Arg Ile Thr Thr Leu Trp Leu Pro Arg Arg Gly Leu Ala Gly
65                  70                  75                  80
Thr Ile Thr Gly Ala Ser Leu Ala Gly Leu Ala Arg Leu Glu Ser Leu
                85                  90                  95
Asn Leu Ala Asn Asn Arg Leu Val Gly Thr Ile Pro Ser Trp Ile Gly
            100                 105                 110
Glu Leu Asp His Leu Leu Tyr Leu Asp Leu Ser His Asn Ser Leu Val
        115                 120                 125
Gly Glu Leu Pro Asn Arg Leu Gln Ile Arg Leu Lys Gly Leu Thr Thr
    130                 135                 140
Thr Gly His Leu Leu Gly Met Ala Phe Thr Asn Met Pro Leu Asp Val
```

145 150 155 160
Lys Arg Asn Arg Arg Thr Leu Ala Ile Gln Pro Asn Thr Ile Ser Gly
165 170 175
Thr Asn Asn Leu Val Leu Ser Gly Arg Asn Asn Val Val Ser Gly Asn
180 185 190
Asp Asn Thr Val Ile Ser Glu Asn Asn Asn Thr Val Ser Gly Ser Phe
195 200 205
Asn Thr Val Ile Thr Gly Ser Asp Asn Val Leu Thr Gly Ser Asn His
210 215 220
Val Val Ser Gly Arg Ser His Ile Val Thr Asp Asn Asn Asn Ser Val
225 230 235 240
Ser Gly Asp Asp Asn Asn Val Ser Gly Ser Phe His Lys Val Ser Gly
245 250 255
Ser His Asn Thr Val Ser Gly Ser Asn Asn Thr Val Ser Gly Arg Asn
260 265 270
His Val Val Ser Gly Ser Asn Lys Ile Val Thr Gly Gly
275 280 285

<210> 22
<211> 254
<212> PRT
<213> Lolium perenne

<400> 22
Met Ala Lys Cys Leu Met Leu Leu Leu Ser Phe Ala Phe Leu Leu Ser
1 5 10 15
Val Ala Gly Thr Ala Thr Ala Thr Pro Cys His Arg Asp Asp Leu Arg
20 25 30
Ala Leu Arg Gly Phe Ala Glu Asn Leu Gly Gly Gly Gly Ala Ile Ser
35 40 45
Leu Arg Ala Ala Trp Ser Gly Ala Ser Cys Cys Asp Trp Glu Gly Val
50 55 60
Gly Cys Asp Gly Ala Ser Gly Arg Val Thr Ala Leu Trp Leu Pro Arg
65 70 75 80
Ser Gly Leu Thr Gly Pro Ile Pro Ser Trp Ile Cys Gln Leu His His
85 90 95
Leu Arg Tyr Leu Asp Leu Ser Gly Asn Ala Leu Val Gly Glu Val Pro

100 105 110
Lys Asn Leu Gln Val Gln Leu Lys Gly Ile Thr Asn Met Pro Leu His
115 120 125
Val Met Arg Asn Arg Arg Ser Leu Asp Glu Gln Pro Asn Thr Ile Ser
130 135 140
Gly Ser Asn Asn Thr Val Arg Ser Gly Ser Lys Asn Val Leu Ala Gly
145 150 155 160
Asn Asp Asn Thr Val Ile Ser Gly Asp Asn Asn Ser Val Ser Gly Ser
165 170 175
Asn Asn Thr Val Val Ser Gly Asn Asp Asn Thr Val Thr Gly Ser Asn
180 185 190
His Val Val Ser Gly Thr Asn His Ile Val Thr Asp Asn Asn Asn Asn
195 200 205
Val Ser Gly Asn Asp Asn Asn Val Ser Gly Ser Phe His Thr Val Ser
210 215 220
Gly Gly His Asn Thr Val Ser Gly Ser Asn Asn Thr Val Ser Gly Ser
225 230 235 240
Asn His Val Val Ser Gly Ser Asn Lys Val Val Thr Asp Ala
245 250

<210> 23
<211> 262
<212> PRT
<213> Festuca arundinacea

<400> 23
Met Ala Lys Cys Leu Met Leu Leu Leu Ser Phe Ala Phe Leu Leu Ser
 1   5   10   15
Ala Ala Gly Thr Ala Thr Ala Thr Pro Cys His Arg Asp Asp Leu Arg
            20   25   30
Ala Leu Arg Gly Phe Ala Glu Asn Leu Gly Gly Gly Gly Ala Leu Ser
        35   40   45
Leu Arg Ala Ala Trp Ser Gly Ala Ser Cys Cys Asp Trp Glu Gly Val
    50   55   60
Gly Cys Asp Gly Ala Ser Gly Arg Val Thr Ala Leu Trp Leu Pro Arg
65   70   75   80
Ser Gly Leu Thr Gly Pro Ile Pro Ser Trp Ile Cys Gln Leu His His
                85   90   95
Leu Arg Tyr Leu Asp Leu Ser Gly Asn Ala Leu Val Gly Glu Val Pro
            100   105   110
Lys Asn Leu Gln Val Gln Leu Lys Gly Leu Thr Ala Ala Gly Arg Ser
        115   120   125
Gly Phe Thr Asn Met Pro Leu His Val Met Arg Asn Arg Arg Ser Leu
    130   135   140
Asp Glu Gln Pro Asn Thr Ile Ser Gly Ser Asn Asn Thr Val Arg Ser
145   150   155   160
Gly Ser Lys Asn Val Val Ala Gly Asn Asp Asn Thr Val Ile Ser Gly
                165   170   175
Asp Asn Asn Ser Val Ser Gly Ser Asn Asn Thr Val Val Ser Gly Ser
            180   185   190
Asp Asn Thr Val Thr Gly Ser Asn His Val Val Ser Gly Thr Asn His
        195   200   205
Ile Val Thr Asp Asn Asn Asn Asn Val Ser Gly Asn Asp Asn Asn Val
    210   215   220
Ser Gly Ser Phe His Thr Val Ser Gly Gly His Asn Thr Val Ser Gly
225   230   235   240
Ser Asn Asn Thr Val Ser Gly Ser Asn His Val Val Ser Gly Ser Asn
                245   250   255
Lys Val Val Thr Asp Ala
            260

<210> 24
<211> 256
<212> PRT
<213> Lolium perenne

<400> 24
Met Ala Lys Cys Leu Met Leu Leu Leu Ser Phe Ala Phe Leu Leu Ser
 1   5   10   15
Ala Ala Gly Thr Ala Thr Ala Thr Ala Thr Pro Cys His Arg Asp Asp
            20   25   30
Leu Arg Ala Leu Arg Gly Phe Ala Glu Asn Leu Gly Gly Gly Gly Ala
        35   40   45
Leu Ser Leu Arg Ala Ala Trp Ser Gly Ala Ser Cys Cys Asp Trp Glu
    50   55   60
Gly Val Gly Cys Asp Gly Ala Ser Gly Arg Val Thr Ala Leu Trp Leu

```
65                  70                  75                  80
Pro Arg Ser Gly Leu Thr Gly Pro Ile Pro Ser Trp Ile Phe Gln Leu
                85                  90                  95
His His Leu Arg Tyr Leu Asp Leu Ser Gly Asn Ala Leu Val Gly Glu
            100                 105                 110
Val Pro Lys Asn Leu Gln Val Gln Leu Lys Gly Ile Thr Asn Met Pro
        115                 120                 125
Leu His Val Met Arg Asn Arg Arg Ser Leu Asp Glu Gln Pro Asn Thr
    130                 135                 140
Ile Ser Gly Ser Asn Asn Thr Val Arg Ser Gly Ser Lys Asn Val Leu
145                 150                 155                 160
Ala Gly Asn Asp Asn Thr Val Ile Ser Gly Asp Asn Asn Ser Val Ser
                165                 170                 175
Gly Ser Asn Asn Thr Val Val Ser Gly Asn Asp Asn Thr Val Thr Gly
            180                 185                 190
Ser Asn His Val Val Ser Gly Thr Asn His Ile Val Thr Asp Asn Asn
        195                 200                 205
Asn Asn Val Ser Gly Asn Asp Asn Asn Val Ser Gly Ser Phe His Thr
    210                 215                 220
Val Ser Gly Gly His Asn Thr Val Ser Gly Ser Asn Asn Thr Val Ser
225                 230                 235                 240
Gly Ser Asn His Val Val Ser Gly Ser Asn Lys Val Val Thr Asp Ala
                245                 250                 255
```

<210> 25
<211> 1083
<212> DNA
<213> Lolium perenne

<400> 25

```
acttgcattc caaaaaggtt tcttgcatac acgtatttag aacaccagaa cttaatccat      60
ggcgaaatgt tggctgctgc tgctcttctt ggtgttcctc ttgctggcca tgagcgcgac     120
gtcgtgccac ctggatgacc tccgcgcgct gcggggcttt gtcgggaacc tcaatggcgg     180
gggtgccctt ctccgtggaa catggtctgg ctcctcatgc tgcgattggg aaggtgtggg     240
ctgcgatggt acaagcggcc gcgtcacggc gttgcggctt ccgattagcc tcgaggactg     300
cggtaagctc aagtcgctca accttgccaa cgaaagattg gttggcacca tcccgtcgtg     360
gattggtgag cttgaccacc attgctactt ggttctctcg gataattcat tggttggtaa     420
ggcacccaat agtttgcaca atagtttgca gataagactc aagggcctcg ccaccgctgg     480
tcgttcacta ggtatggctt tcgctaacat gccattgcat gtgaagggga accgaagaac     540
cctcgacgaa caaacaaata caatacatgg gaccaacaac actgttagat ctgggaacga     600
caatgctgtt tctgggaacg acaacactgt catatgtggg aacaacaaca ctgtgtctgg     660
gagcaacaac accattgcat ctggcagtga caatatcgta actggcagca accatattgt     720
atgtgggacc aaacatatca taactgataa caacaatgac gtatccggca atgataataa     780
tgtatctggg agcttccata ctgtatccgg gagccacaat actgtatctg gaagtaacaa     840
cactgtatct ggaagcaacc atgtcgtatc tggaagcaac aaagtcgtga caggagatga     900
atgatttgtc aggggattgc ttccatcttt cctaaaggag ctctcaccct agtccaagtt     960
cggtgcagct cacaatcact tggtagggac aatcgagtta tgtaacttca tggatatagc    1020
atcattctcc ctgtttaaat atactttcct gaaaatatct tacataaatg ctgaaaaaaa    1080
aaa                                                                  1083
```

<210> 26
<211> 281
<212> PRT
<213> Lolium perenne

<400> 26

```
Met Ala Lys Cys Trp Leu Leu Leu Leu Phe Leu Val Phe Leu Leu Leu
```

```
 1               5                  10                  15
Ala Met Ser Ala Thr Ser Cys His Leu Asp Asp Leu Arg Ala Leu Arg
            20                  25                  30
Gly Phe Val Gly Asn Leu Asn Gly Gly Gly Ala Leu Leu Arg Gly Thr
        35                  40                  45
Trp Ser Gly Ser Ser Cys Cys Asp Trp Glu Gly Val Gly Cys Asp Gly
    50                  55                  60
Thr Ser Gly Arg Val Thr Ala Leu Arg Leu Pro Ile Ser Leu Glu Asp
65                  70                  75                  80
Cys Gly Lys Leu Lys Ser Leu Asn Leu Ala Asn Glu Arg Leu Val Gly
                85                  90                  95
Thr Ile Pro Ser Trp Ile Gly Glu Leu Asp His His Cys Tyr Leu Val
            100                 105                 110
Leu Ser Asp Asn Ser Leu Val Gly Lys Ala Pro Asn Ser Leu His Asn
        115                 120                 125
Ser Leu Gln Ile Arg Leu Lys Gly Leu Ala Thr Ala Gly Arg Ser Leu
    130                 135                 140
Gly Met Ala Phe Ala Asn Met Pro Leu His Val Lys Gly Asn Arg Arg
145                 150                 155                 160
Thr Leu Asp Glu Gln Thr Asn Thr Ile His Gly Thr Asn Asn Thr Val
                165                 170                 175
Arg Ser Gly Asn Asp Asn Ala Val Ser Gly Asn Asp Asn Thr Val Ile
            180                 185                 190
Cys Gly Asn Asn Asn Thr Val Ser Gly Ser Asn Asn Thr Ile Ala Ser
        195                 200                 205
Gly Ser Asp Asn Ile Val Thr Gly Ser Asn His Ile Val Cys Gly Thr
    210                 215                 220
Lys His Ile Ile Thr Asp Asn Asn Asn Asp Val Ser Gly Asn Asp Asn
225                 230                 235                 240
Asn Val Ser Gly Ser Phe His Thr Val Ser Gly Ser His Asn Thr Val
                245                 250                 255
Ser Gly Ser Asn Asn Thr Val Ser Gly Ser Asn His Val Val Ser Gly
            260                 265                 270
Ser Asn Lys Val Val Thr Gly Asp Glu
        275                 280
```

<210> 27
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Made in the lab

<400> 27
gaattcggta ccccatcaac 20

<210> 28
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Made in the lab

<400> 28
gcatgtgagt gaacgcctta 20

<210> 29
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Made in the lab

<400> 29
gaattcggta ccccatcaac 20

<210> 30
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Made in the lab

<400> 30
gtgatcaagc tcaccaatcg 20

<210> 31
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Made in the lab

<400> 31
gaattcggta ccccatcaac 20

<210> 32
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Made in the lab

<400> 32
aggatgctcc tgtgatggtc 20

<210> 33
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Made in the lab

<400> 33
gaattcggta ccccatcaac 20

<210> 34

<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Made in the lab

<400> 34
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